Review on Summations and Recursive

You may use a calculator only for computational purposes once you have use the appropriate formula. You may not use your calculator to sum up all of the values to get your answer. If I do not see all of your work and use of formulas you will not receive full credit.

1. 
2. 
3. Re-Write the following summation so it starts at 1 and then find the sum:



1. Write the following Series in Summation notation:



1. Write the following Series in Summation notation:



1. 
2. 
3. 
4. 
5. Can I find : ? Explain your answer .
6. Write a recursive formula for the following sequences . Be sure to label whether you are starting at .
   1. 3, 5, 7, 9,……..
   2. 3, 5, 9, 17,…….
   3. 128, 64, 32, 16, …....
7. Susie has strep throat and the doctor tells her that she needs to take 300 mg of penicillin 4 times a day (every 6 hours) for 10 days. Suppose the medicine dissipates at the rate of 30% every 6 hours.
   1. Write a recursive formula to describe how much medicine she has in her system during each 6 hour period.
   2. How much medicine does she have in her system after 3 days? ( be sure to show all of your work! If you got it off a table be sure to write all previous values)
   3. Does her medicine ever reach and equilibrium point? If so what is it? Explain your answer thoroughly. (prove it algebraically, you may not use your calculator)
   4. When does she reach equilibrium? How many days (of taking the medicine) is she at equilibrium?
8. Suppose Susie could not remember to take her medicine every 6 hours and she took it only twice a day until all the medicine was gone but took a double dose. Since she was taking it twice a day it is now dissipating 60% each dose. Will she kill the strep bacteria in her system? Use what you know about equilibrium and why doctors prescribe certain dosages at certain intervals to help you answer this question. Be sure to show all your work clearly and explain you work in words.

4. The population of a certain town grows as a result of two conditions:

1. The annual population growth is 5% of those already in the town. This growth rate equals the birth rate minus the death rate.
2. 250 people immigrate into the town each year.

The population is currently 2,500 people.

1. Find a recursive equation that represents the population of the town in terms of the population the previous year: =



1. Find the population of the town for the next 7 years (show all algebraic work neatly, you may not copy the values from the table in your calculator).
2. Does the population stabilize? If so, after how many years and with how many people? (Show **all** work and explain your answer well in complete sentences)